ROBOT MOWER
USER MANUAL

Please read this manual before use

Please keep this manual for future reference

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SAFETY WARNINGS & PRECAUTIONS

1. Read the owners/operation manual carefully and follow all the safety and warning instructions.
2. This machine has sharp rotation blades! Never allow the mower to operate unattended; keep bystanders, children and pets away from mower when in operation.
3. Never allow anyone to ride or ait on mower.
4. Never allow anyone or person who is not familiar with the safe operation of the mower to operate the mower.
5. Keep hands and feet away from the cutting blades and other moving parts.
6. Never attempt to service or adjust the mower while it is in operation.
7. Inspect and clear the mowing area of all debris (toys, tree branches, items of clothing, etc) before operating the mower.
8. Never raise the mower or attempt to inspect the blades while the mower is operating.
9. Always turn off the power before lifting the mower or attempting any adjustment.
10. When operating the mower in manual mode, maintain a safe distance from behind or around the mower and wear proper foot apparel.
11. Do not operate the mower on slopes greater than 20 degrees or use it in manual operation on slopes where a firm footing is not possible.
12. Do not operate the mower if any safety feature or device is damaged or inoperable.
13. Do not attempt to disable or defeat any safety feature or device.
14. Use heavy gloves when inspecting or servicing the blades.
15. Wear eye protection and use gloves when installing the virtual wire and driving the wire stakes/pegs. Firmly drive all pegs in order to keep the wire from becoming a tripping hazard.
16. Do not use the charging station power supply with an extension cord.
17. Use only the original equipment power pack and power supply/charger with this mower.
18. Do not use the power supply/charger if the cord has become damaged.
19. Do not place metal objects in the area of the charging contacts on the charging station.
20. Do not place metal objects across the charging pins of the mower.
21. Do no spray water directly into the docking area of the charging station or onto the operating panel of the charging station.
22. The mower has sharp rotating blades! Please care the mower when it is mowing, in case of serious injury occur.
23. Keep the lawn mower in perfect operating conditions by performing the maintenance procedures outlined by the manufacturer. Good maintenance guarantees better performance and longer service life.
24. In order not to irreversibly damage electric and electronic parts, do not wash the robot with water jets at a high pressure and do not plunge it partially or thoroughly in water, as it is not watertight.
25. It is absolutely forbidden to use the robot in explosive and flammable environments.

SAFETY INFORMATION & WARNING LABELS

1 2 3 4 5 6

1. WARNING-this is a dangerous power tool. Use care when operating and follow all safety instructions and warnings.
2. Read the owner/operating manual carefully and follow all safety instructions.
3. Objects can be thrown from mower while operating, take caution.
4. Keep children, pets and bystanders away from mower.
5. Sharp rotating blades. Keep hands away and do not attempt to lift mower from this area.
6. Sharp rotating blades. Keep feet away.

DANGER! Sharp rotating blades.
Keep hands and feet away.
Serious injury can occur.

CE, Rohs approved
Input and output of mower.

The charging station fence must face towards the interior section of the lawn when installed. Failure to do so may result in damage to property or persons.

ROBOT LAWN MOWER SAFETY FUNCTIONS

1. Lift sensor
There is a 45 degree sensor located on the PCB. When the mower was lifted over 45 degree, the blades will stop rotating immediately. (<2 seconds)

2. Bumpers
In front of the mower there equipped with three bumper board that will activate when the mower strikes solid, fixed object when that object is at least 6.5cm in vertical height from the supporting surface of the mower. When the bumper sensor is activated, the mower will stop movement in that direction and reverse itself away from the obstacle.

3. Two steps start the mower safety starting
The mower has two steps to start it: First step, turn on the key switch and take off the key. Second step, press the emergency switch, when the red light show the mow start.

4. Emergency stop switch
There is an emergency stop switch located at the back of mower which is next to the key switch, red in color in the middle of the button. If you press it in any case during operation, the mower must stop all movement and stop the rotation of the blades immediately. (<1 seconds)

5. Overload protect
Each of the two blade motors and each of the two wheel drive motors are monitored continuously during operation for any situation that may cause these motors to over-heat. In the event this is detected, the mower will stop operation.

6. Auto charging system
When the mower is operating it feels powerless, the cutting motor turn off at once and it will find the virtual wire then go alone it back to charging station for charging automatically. (this allows you to keep the charger connected with the charging station at all times, even after the battery is fully charged.) The mower will going mowing after charging.

7. Fuse protect the circuit
There is a fuse hold on the back of mower next to charging jack, it contains a one-time-use fuse in the event of a short-circuit or power malfunction.

8. Virtual wire
The robot lawn mower can't operate without a virtual wire. (we suggest to use 100m of virtual wire). It leads the mower back to charging station and the mower will take it as a wall when it is operating. The mower will go on the virtual wire until it meets

charging sheet which is in front of charging station, then get off virtual wire start cutting.

9. Rain sensor

There are two rain sensor on top cover of mower. The mower can go back to the charging station automatically when it's raining.

10. Two cutting models

There are two cutting models of our mower, go straight and go circle (high efficiency). We can choose the model from remote control.

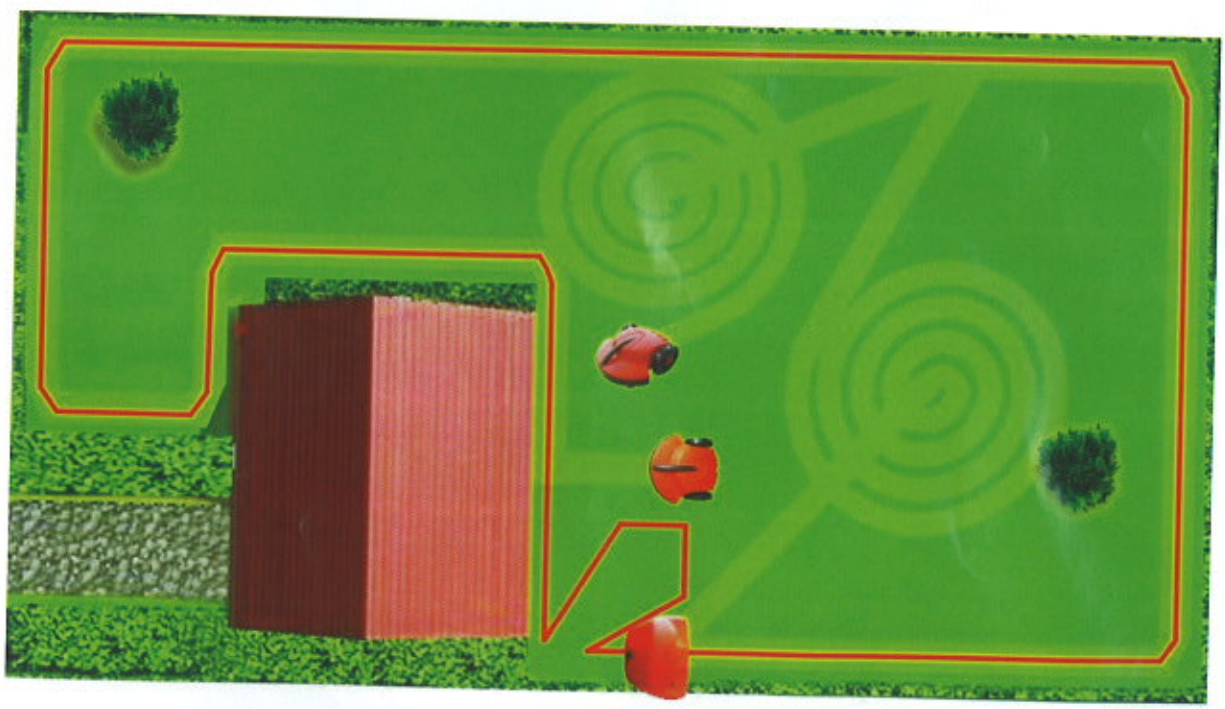
11. Cutting height adjustment

There are two choice, 3cm and 4cm.

12. Infrared ray

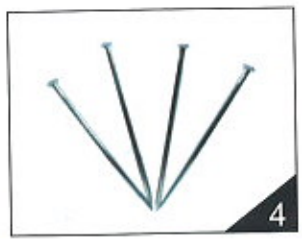
There are two infrared ray located in front of bumper, which is functioned to reduce the running speed before the mower connect charging station.

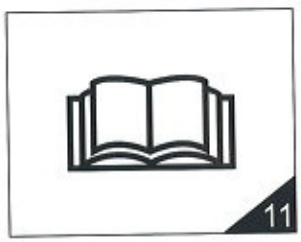
13. The mower goes clockwise to enter the assigned area mowing until it is low power.



Elements of mowing process

WHAT'S IN THE BOX





1.Robot Lawn Mower

2.Charging station
Used for directing the robot lawn mower to the charging contacts.

3.Charger
Used for recharging the robot directly.

4.Stakes (4Pcs)
Used for fix the charging station to the ground.

5.Virtual wire (100m)
Used to mark mowing area and create a virtual wall for the mower.

6.Pegs (100Pcs)
Used for fix the virtual wire to the ground around the lawn perimeter and around obstacles.

7.Remote control
Control the mower.

8.Remote control battery
For remote control use.

9.Blades
Two blades pre-installed on the mower, and two extra.

10.Fuse

11.Keys (2Pcs)
Used for turn on the mower.

12.English use manual

TECHNICAL INFORMATION

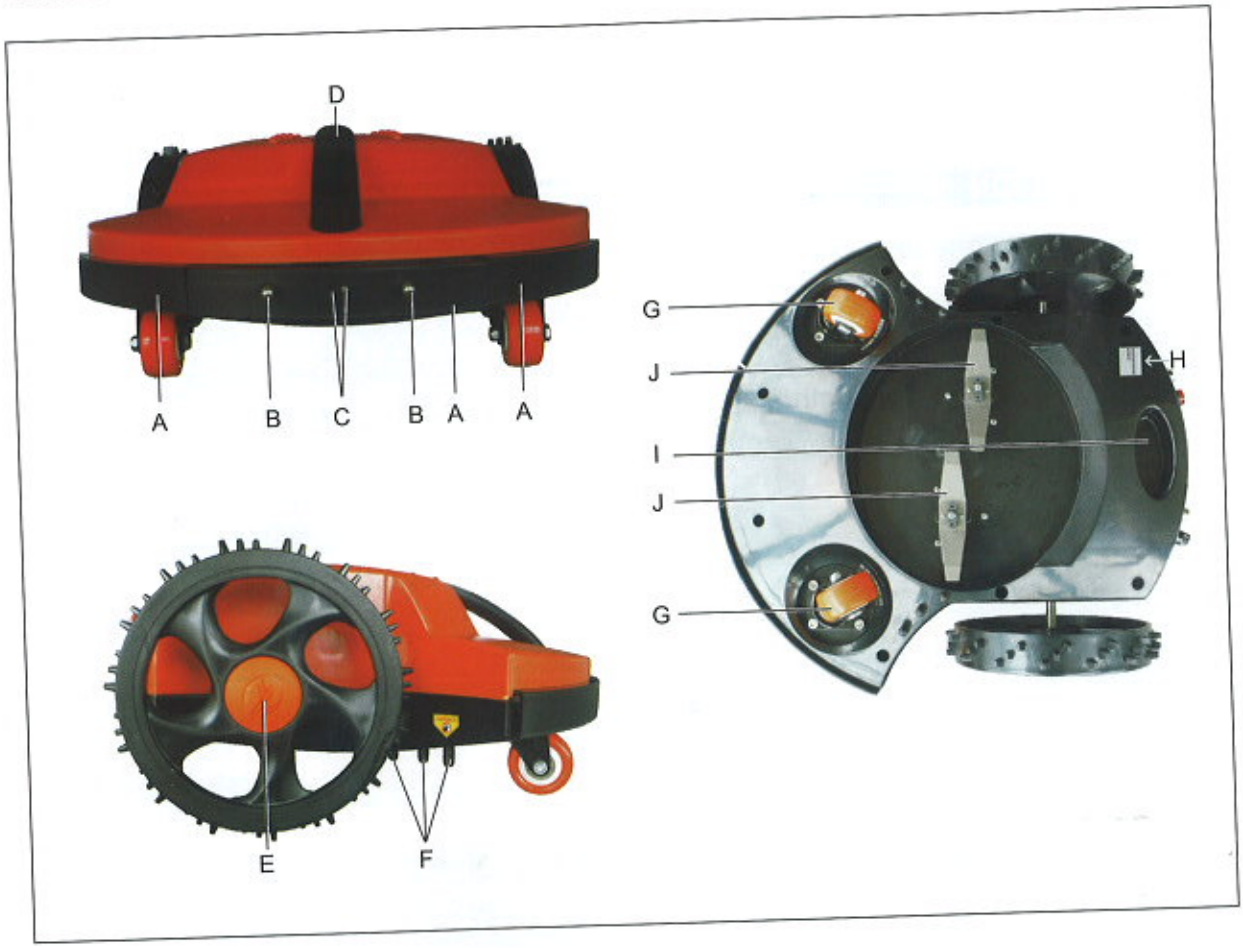
Power supply input: 100-240V 50/60HZ
Output: 24V

Robot lawn mower technical information

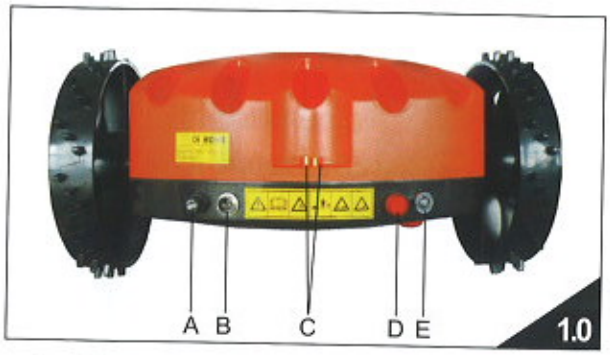
DESCRIPTION	SPECIFICATIONS
Coverage (for one time charge,)	600m2±20% (depends on the conditions of lawn)
Working capacity	1500 m2±20% (depends on the conditions of lawn)
Virtual wire maximum length/diameter	200m /1.0mm
Suggest Virtual wire length/diameter	100m/0.5mm
Mower size	56*51*25cm (L W H)
Charging station size	38.5*44.5*16cm (L W H)
Carton size	77*57.5*28cm (L W H)
Power	82W
Noise	≤65db
Cutting blades	4pcs (2 pre-installed, and 2pcs extra)
Cutting width	28cm (14cm/pc)
Cutting Height	3cm/4cm
Cutting speed	20m/min
Blades rotate speed	5000 rpm±10%
Hill capability	45degree Max slope
Max ambient functioning temperature	40℃
Average working time	2-3 hours
Wireless remote control	Within 10m
Battery	lead-acid / lithium battery24V, 7.2AH
GW/NW	20KG/17.5KG with lead-acid batteries 17KG/14.5KG with lithium batteries
Charging time for battery	3-4 hours
Rain sensor	Yes
Auto recharge	Yes
Intelligent spiral	Standard
Go straight	Standard
Anti theft	Yes, 2pcs key
Security	Lift sensor, buzzer
Waterproof	Yes, IPX5
Warranty (mower)	1years

MAIN PARTS

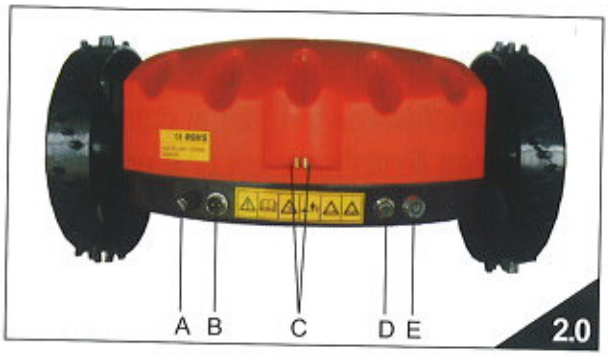
1. Robot lawn mower



A. Bumper: mower will stop and change direction when it meets obstacles
B. Charging point
C. Infrared ray: while mower follow virtual wire back to home it will reduce speed before it meets charging station.
D. Handle
E. Tyre cover: take it out and change the tyre.
F. Safety hence: keep off foot and hands.
G. Omni-directional wheels
H. Product date
I. Handle
J. Blades

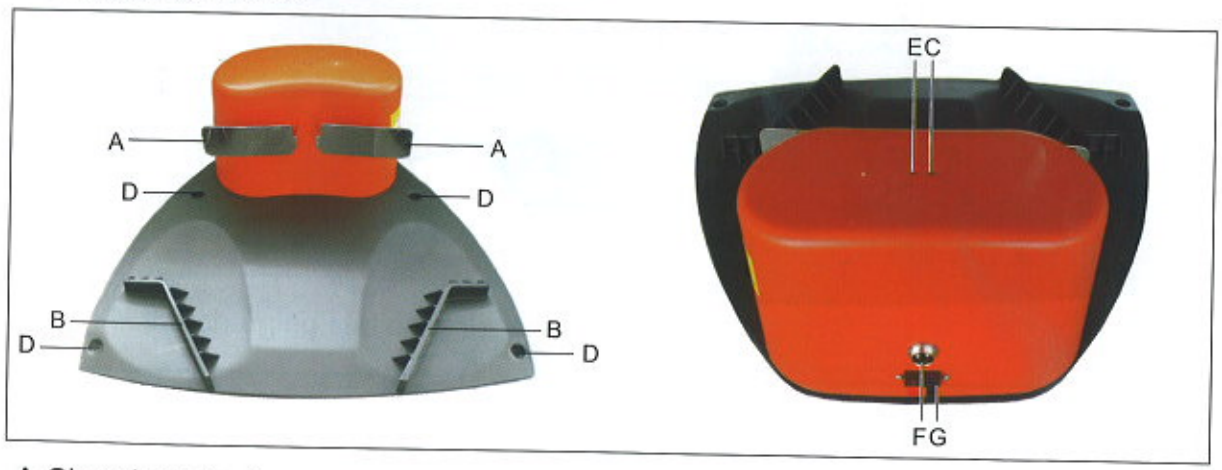


A. Fuse: Protect the mower when it is overloading.
B. Charge plug
C. Rain sensor: Mower go back home automatically when it rains.
D. Power light: turn red if the mower is on.
E. Power switch: " ⏻ " on " ⏻ " off
The key cannot be pulled out when switch on.



A. Fuse: Protect the mower when it is overloading.
B. Charge plug
C. Rain sensor: Mower go back home automatically when it rains.
D. Emergency switch: turn on key, press this button and it turns red, then the mower start.
Press this button at any time the mower stopped.
E. Power switch: " ⏻ " on " ⏻ " off
The key can be pulled out when switch on.

2. Charging station



A.Charging sheets
B.Guide channel
C.Charging light Red: charging Green: full charged or idle
D.Stakes hole
E. Virtual wire light Red: broken wire / idle Colorless: good wire connecting
F. Charge plug
G.Patch jack, Connect the virtual wire randomly, There is no positive and negative.

3. Remote control

A.Remote control analyzing

- Power light
- Power Switch

Model: Go straight

Go circle

L: Go lift

R: Go right

Home: Back to charging station

Mow: Turn on mowing

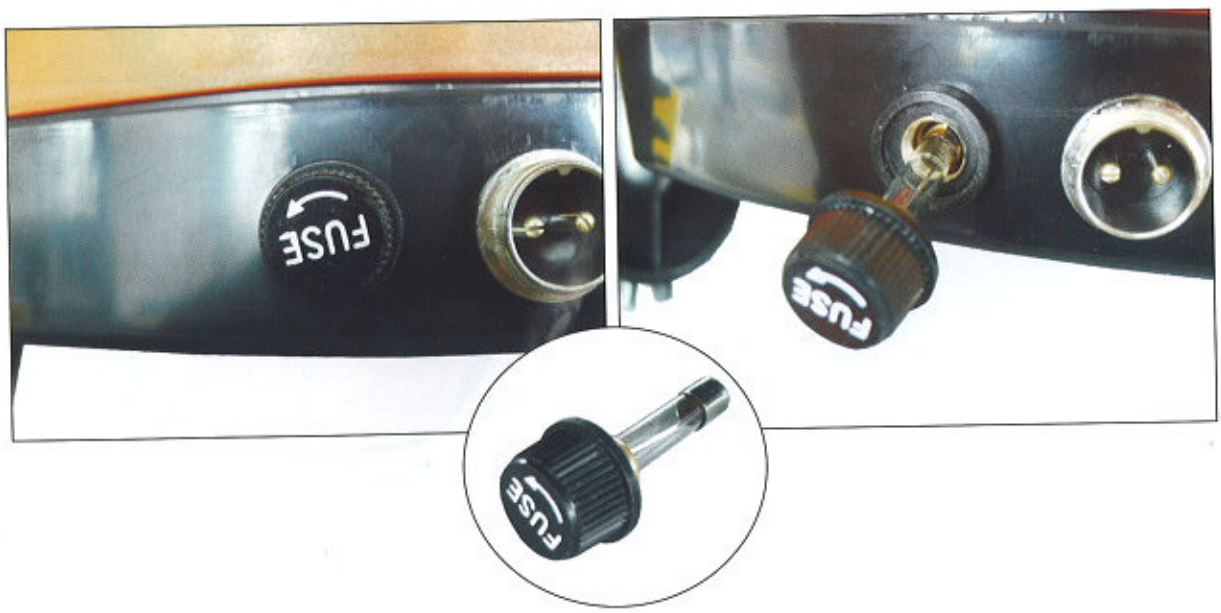
Turn off mowing

B.Replacement of remote control battery

Used 23A, 12V battery.

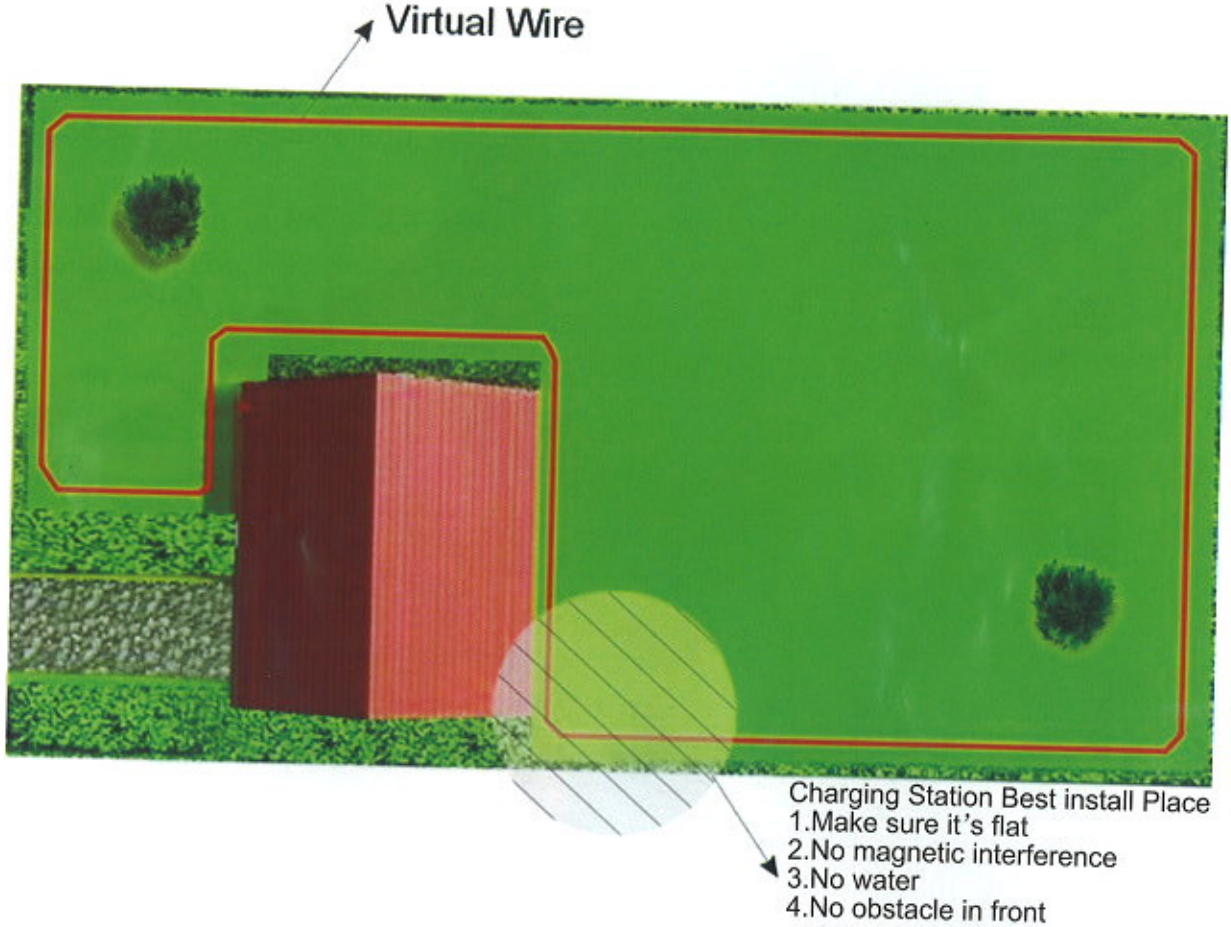
4. Fuse replacement

Loosen cover and replace with a new fuse.



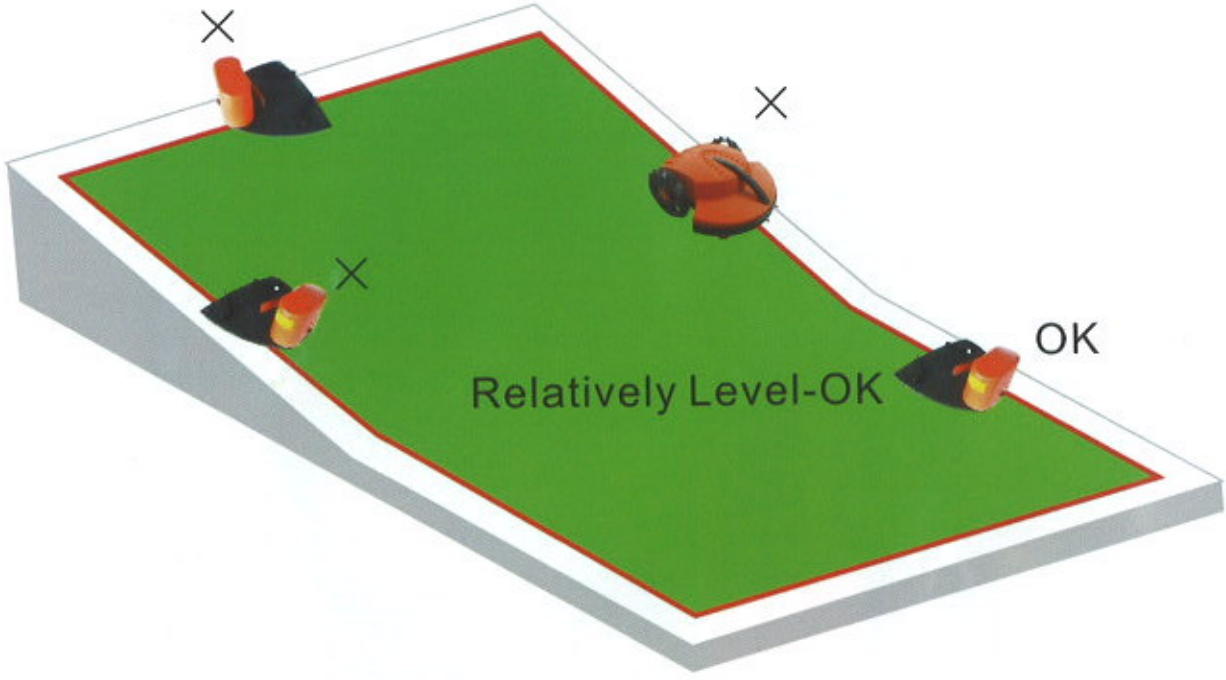
CHARGING STAION INSTALLING

1. Choose installation place, please make sure which is flat, no water (the charging station is not water-proof), no magnetic interference and no obstacle in the front of charging station.



2. Fix the charging station with stakes.

3. Lay virtual wire in the middle of charging station.
4. Please fix the charging station in level place.



Notice:
Before fix the charging station on the lawn, you should examine your lawn and decide the best location which is easy for the mower to find the station to recharge.

Notice:
Hard or dry ground may cause pegs to break when Driving them in. In extreme cases, watering the lawn where the pegs will be driven.

5. Never use a high-pressure washer or even running water to clean the robot lawn mower.

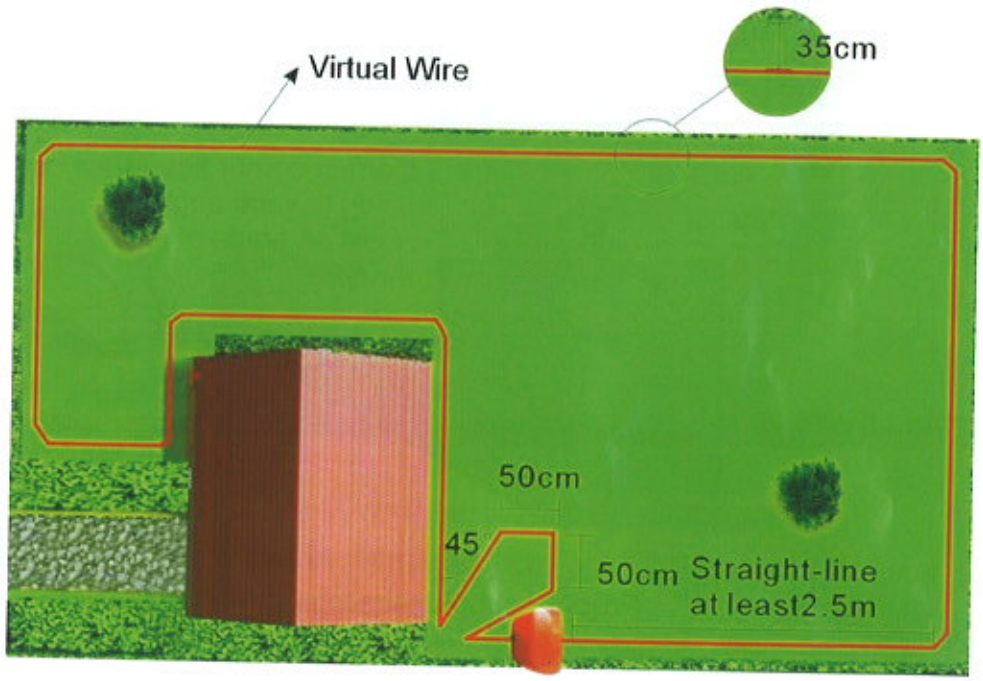
SET UP VIRTUAL WIRE

1. Dig virtual wire with pegs 1 meter per piece.

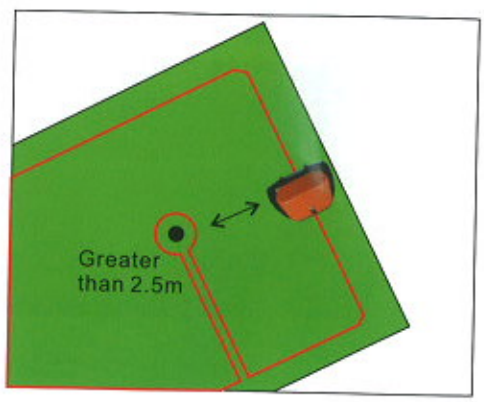
2. If a high obstacle, for example a wall or fence, borders the working area, the boundary wire should be laid 35CM from the obstacle.

3. A minimum distances from the charging station and any obstacle is 2 meters. Make sure the distance from corner to charging station is at least 2 meters.

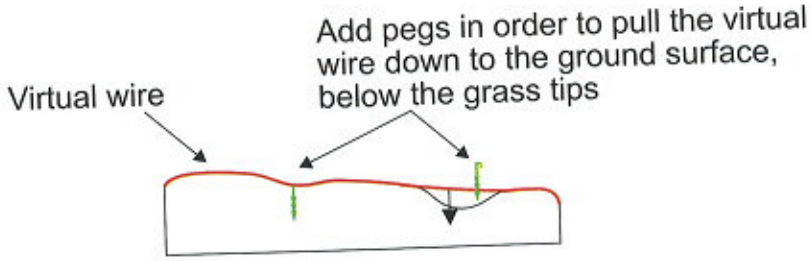
4. Make sure to lay a 2.5 meter minimum straight-line of virtual wire in front of charging station.



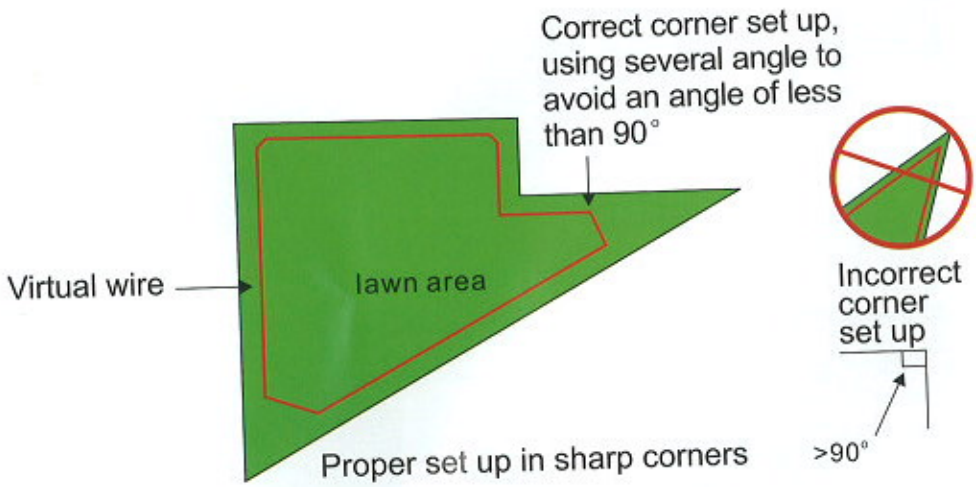
5.The distance between charging station and virtual loop should at least 2.5 meters.



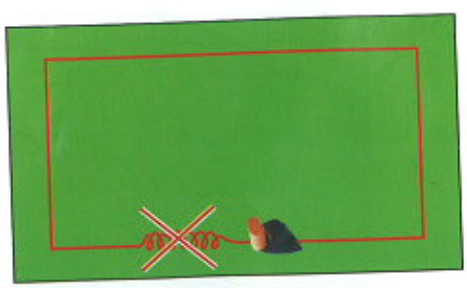
6. Bury virtual wire below grass and fasten it on the ground with pegs, so that the mower should not cut the wire. If the grass grow up, we can still keep the virtual wire as before.



7. Care must be taken not to create a corner sharper shorter than 90 degrees when setting up virtual wire. A corner sharper less than 90 degrees can cause the mower to lose track of virtual wire. We can make greater than 90 degrees corner like follow picture to avoid this situation.

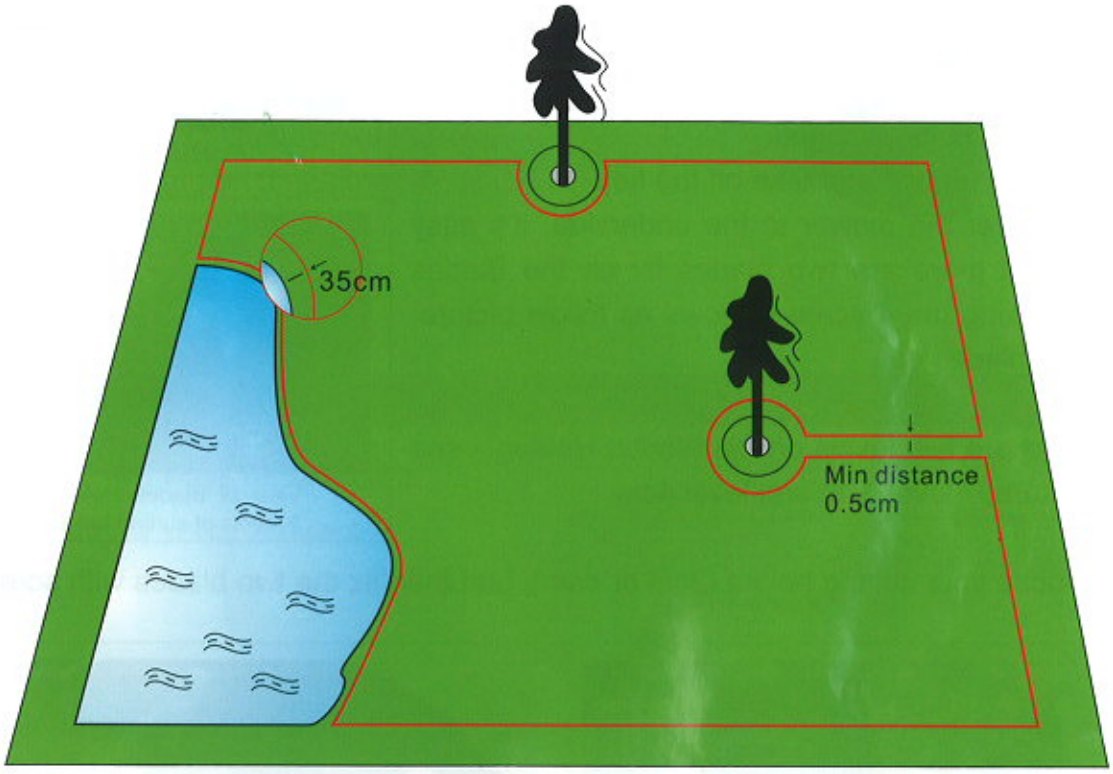

Correct corner set up, using several angle to avoid an angle of less than 90°
Virtual wire
lawn area
Proper set up in sharp corners
Incorrect corner set up
>90°

8. Redundant virtual wire back charging station must be cut.



9. A maximum virtual wire length of 200M (wire diameter: 1.0mm) recommended. Area requiring longer lengths should be broken into separate zones. To be sure each zone should have a charging station.

10. How to set virtual wire on the ground which has pool or trees.



11. Connect two ends of virtual wire to patch jack (located on charging station) randomly, there is no positive and negative.

12. One mower in several gardens
Please make sure that each garden should have located a charging station.
Contact your dealer for further information.

IMPORTANT INFORMATION

If the working area is adjacent to water bodies, slops or precipices, the boundary wire should be supplemented with a fence or the like. The height must then be at least 15cm. This will prevent mower from ending up outside the working area under any circumstances.

BLADES ADJUSTMENT

The cutting height can be varied for 3cm or 4cm. (Factory setting of blades is 4cm)
If the grass is long it is appropriate to let the mower start mowing at 4cm. Once the grass is shorter, you can change it lower with 3cm.

Underside view

To adjust the cutting height:

1. Stop the mower and take off the key.
2. Turn over the mower to the underside. It's easy to find that there are two blades fix on the Blades Holder. Swing the 4 screws shows as follow picture. And take blades out.

View of Blades Holder,
2 levels of cutting height

3. There are two levels on the Blades Holder, （see right picture） level 3cm and level 4cm.

4. Choose your cutting height (3cm or 4cm), and then fix the two blades with screws.

3cm

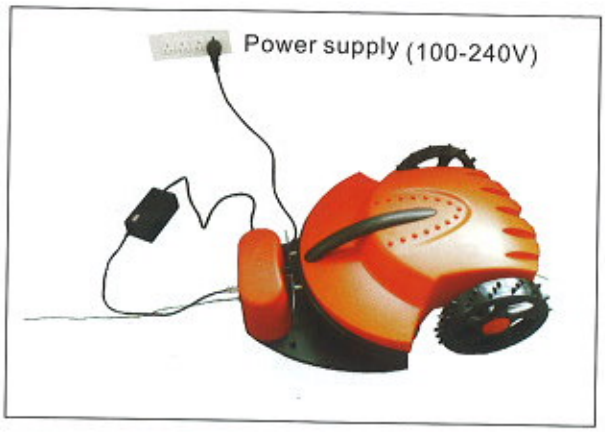
4cm

5. Turn over the mower to upside. Cutting height adjustment finished.

Notice:
Use heavy gloves when inspecting or servicing the blades.

POWER CONNECTION

Firstly, insert charger to charging station, and then connect the charger plug to 110-240V power supplier.



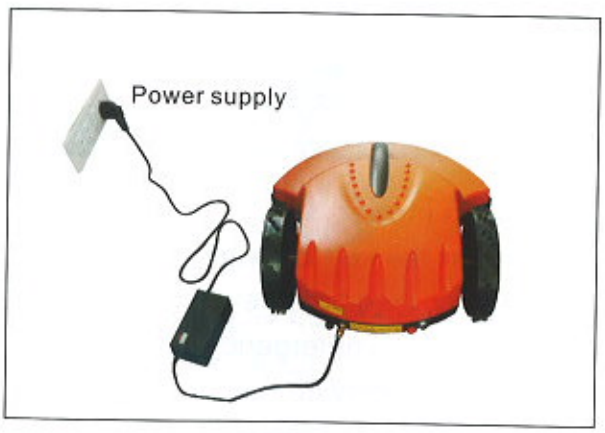
Notice:

The charger is not water-proof therefore it must be located on a place which is dry And ventilated.

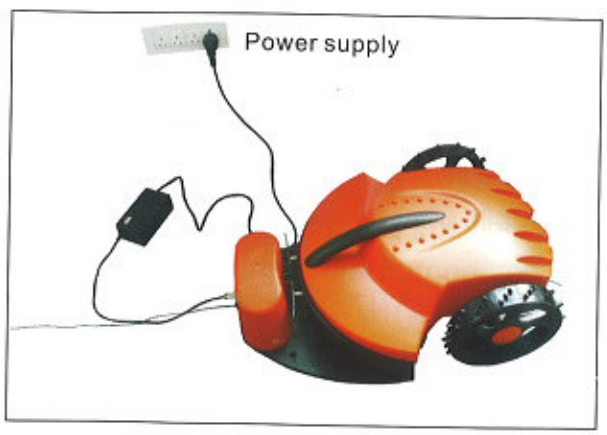
CHARGING

There are two ways for charging.

1.Charging by charger directly

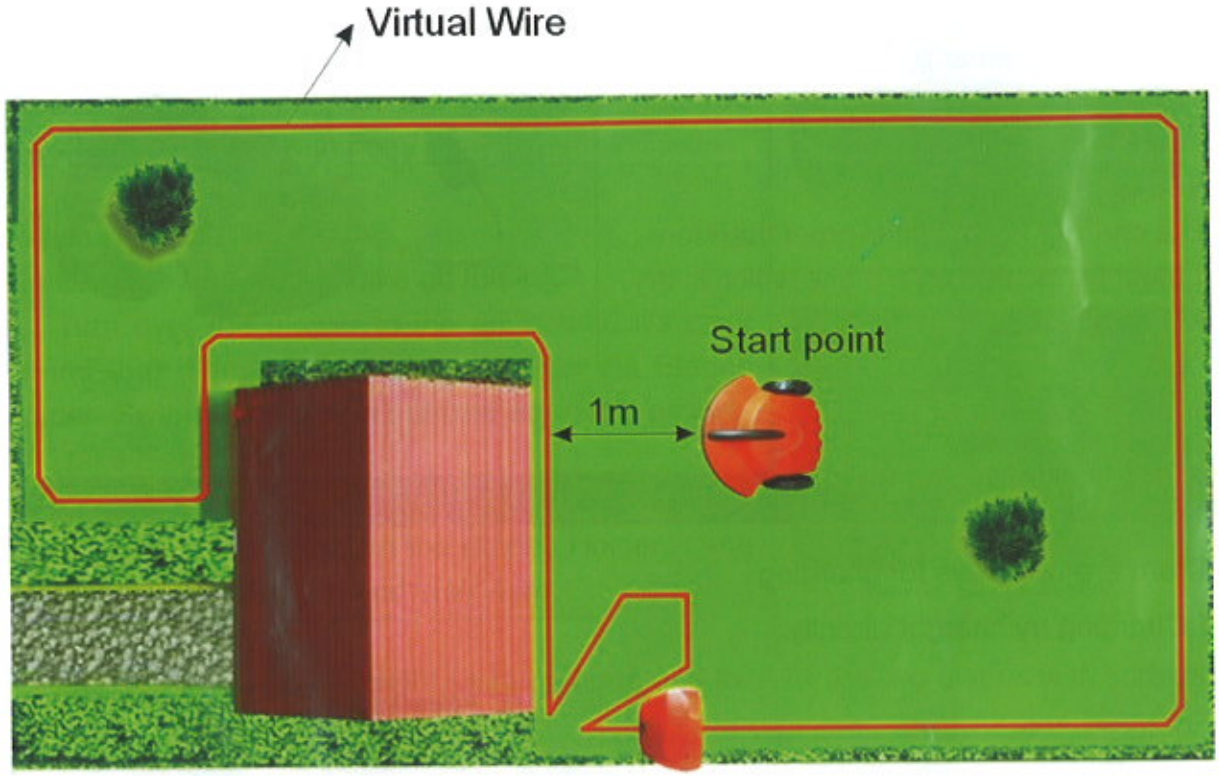


2.Through the charger station (automatically)



TURN ON/OFF THE MOWER

1. Take mower to Start point: 1 meter in front of virtual wire.(see follow picture)



2. Start the mower

1.0 Insert the key to switch and trun ◎on the mower.

2.0 Firstly, Insert the key to switch and trun ◎on the mower, then pull out the key. Secondly, press emergency button, the mower started.

3. Turn off the mower

1.0 Turn ◎off the mower, and then pull out the key.

2.0 Firstly, press the emergency button to stop the mower. Secondly, trun◎off the mower, and pull out the key.

Notice:

Do not start mower on virtual wire directly while the machine has just finished charging. It's needs to be put on to start point and restart it. Otherwise may cause serious injury.

⚠ IMPORTANT INFORMATION

Robot lawn mower cannot be used before the installation is complete.

CARE AND MAINTENANCE

1. CLEAN THE ROBOT EVERY MONTH AS FOLLOW:

A. Stop the robot in safety conditions.

B. Clean all the outside surfaces of the robot with a sponge soaked in warm water.

C. Do not use solvents or benzene so not to damage the varnished surfaces and the plastic components.

D. Do not wash the inside parts of the robot and do not use water jets in pressure so not to damage the electric and the electronic components.

E. Check the lower part of the robot (cutting blade area and wheels) and remove the deposits and/or residues that might obstruct the correct functioning of the robot

F. To remove the deposits and/or other residues form the blades, use a suitable brush.

G. Clean the outside of the recharging station from any accumulated residues.

2. CHECK TWO BLADES EVERY WEEK.

A. Clean and check the efficiency of the blades

B. If the blades are bent due to an impact or if it is worn-out, replace it.

3. BATTERY

A. Attentions for lead-acid batteries.

a. Please don't remove the batteries privately.

b. Storage

(1.) Charge the batteries at least once every six months of they are at 25℃. The interval of this charge should be reduced to 50% by each 10℃ rise in temperature above 25℃. The self-discharger rate doubles for each 10℃ in temperature. If they are stored for a long time in a discharged state, their capacity may not recover ever after charge. If the batteries are stored for more than a year at room temperature, the life of the batteries may be shortened.

(2.) Store the batteries starting from the fully charged state to prevent the life of the batteries being shortened.

(3.) Use the batteries as quickly as possible after receiving them as they gradually deteriorate even under proper storage conditions.

B. Attentions for lithium batteries

a. Please charge the lithium batteries in accordance with standard time and procedures.

b. When the power is too low, it should be started charging as soon as possible.

c. Activation the lithium batteries should be normal charged-discharged for 3-5 times to activate electricity back to normal capacity.

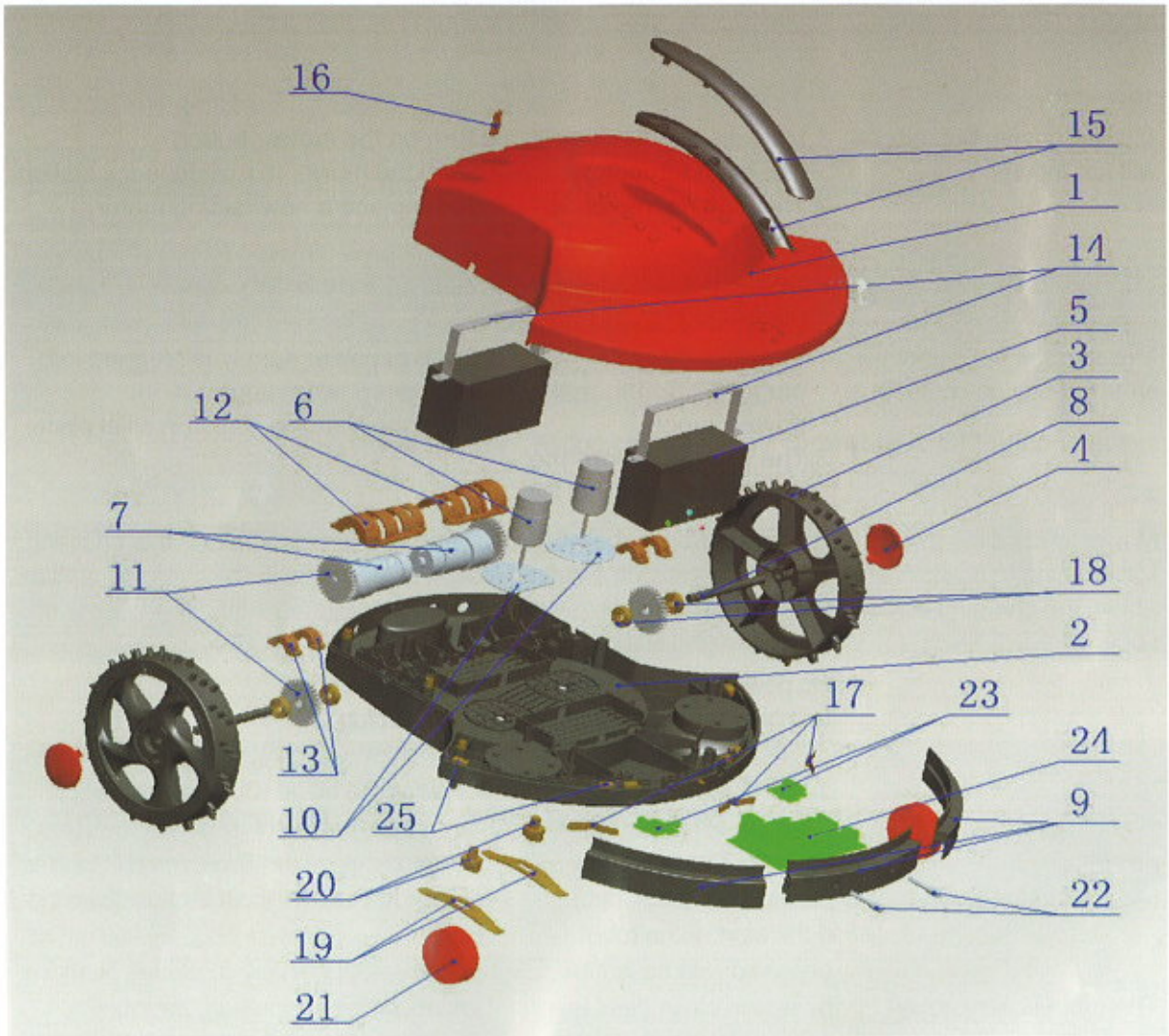
d. Storage-we suggest the optimum storage of lithium battery is with 40% power and keep in the shade.

TROUBLING SHOOTING

Problems	Possible reasons	Solutions
The mower moves out of the area rounded by the virtual wire or moves in circle searching for the virtual wire	The virtual wire fails to send signals. The virtual wire is broken by the mower.	Check the virtual wire light. Be sure the virtual wire is connected to the charging station that is in motion, and there is no loose place
The mower does not work	1.It is trapped in the lawn; 2.It moves to the area where the grass is thick; 3.The mower was lifted over than 45 degree	Clear the lawn where the mower is trapped or restart the mower in another place. Then the mower will work in a new circle.
The mower buzzed	1.The "power" button on the remote control is touched. 2.The mower was lifted over than 45 degree. 3.Blades are plugged up seriously and the power becomes inefficient. 4.The mower stop when he can not meet the virtual wire in 9 minutes	1.Press "power on & off" button again. 2.Restart the mower. 3.Turn off the mower, and charge it manually.
The remote control does not work	The electricity power is low	Change batteries
The batteries can not recharge		Check whether the charger is well connected
Large patches of uncut grass remain after mower has completed mowing	Power is not fully charged for operation	Charge again until the power light "green".
	Power nearing natural end of life	Replace the battery and follow the maintenance
	Grass is extremely overgrown or very wet	Cut the grass appropriate height
The bumper does no activate when meeting obstacle	Micro switch is broken	Send the mower to provider and repair to change the micro switch
Mower gets stuck frequently when traveling optimal terrain	Low ground	Raise ground clearance to the uppermost position
	Cutting height too low	Raise cutting height
	Terrain needs landscaping repairs	Fill in all holes, cover or exclude all exposed roots in order to smooth the terrain

Mower does not complete the edge	Obstacle along the path	Watch the full operation of edge and confirm no obstacle are present
Mower lamp not flashing when the blades are in operation	Faulty power lamp	Replace operation lamp
Mower drives but blades will not mow	1.Mow on remote control has been turned off 2.The cutting motor is broken	1.Turn on the mower button 2.Send the mower to maintenance station and replace a new cutting motor
Short run time, operates less time than normal	Power is not fully charged for operation	Charge again until the power light "green"
Mower does not detect the charging station contacts	1.Power supply is not plugged into the main power supply. 2.The ground before the charging station is not flat	1.Confirm power supply is plugged into the main power supply 2.Reset the charging station in a flat place.
Mower reached the charging station when its contacts are above the charging station contacts	Height difference between the charging station and the lawn surface at the entrance to the charging station	Confirm the ground before the charging station is leveled with the charging station if necessary fill area with dirt and level off.
	No power to plug receptacle or main power is shut off	Check the power Check the plug
The robot is very noisy	1.Damaged cutting blades 2.cutting blade flooded by residues (tapes, ropes, plastic fragments, etc.). 3.the start of the robot occurred with obstacles being too close (less than 1m away) or in presence of unexpected obstacles (fallen branches, forgotten objects, etc.). 4.damaged electric motor 5.Grass too high	1.Replace the blade with a new one. 2.Stop the robot in safety conditions; Use protection gloves to avoid the risk of cuts on hands; Remove the fold cause from the blade. 3.stop the robot in safety conditions; Remove the obstacles and restart the robot. 4.Get the motor repaired or replaced by nearest maintenance station. 5.Increase the cutting height; Carry out preliminary cutting of the area with a normal lawn mower.
The robot behaves in an anomalous manner around the flower beds	Virtual wire incorrectly placed	Relocate the virtual wire.
	Charging station / the virtual wire corrosion	Check the charging station contact your provider id the contacts is replaced
	Mower is operated in the zone with the charging station but stopped	Turn off the power by keys and takes it to charge.

EXPLODED VIEW



1.Upper cover	14.Batten of battery
2.Bottom cover	15.Handle
3.Plastic wheels	16.Rain sensor copper head
4.Shell	17.Springs copper sheet
5.Batteries	18.Bearing
6.Cutting motor	19.Blades
7.Running motor	20.Blades holder
8.Axle	21.Omni-directional wheels
9.Bumper	22.Charging copper head
10.Motor gasket	23.Sensor board
11.Gear	24.Main circuit board
12.Motor pressure plate	25.Micro switch
13.Bearing pressure plate	